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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Armando Annunziato

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EXAMINER

CHAMBERS, TANGELA T

ART UNIT

PAPER NUMBER

2617

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,425	Applicant(s) ANNUNZIATO ET AL.	
	Examiner TANGELA T. CHAMBERS	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment and arguments filed on 4/09/2010.
 - (a) Claims 1-26 are cancelled.
 - (b) Claims 27, 29, 34-35, 37, 43-44, 46-48 and 50-52 have been amended.
 - (c) Claims 27-52 are pending.

Request for Continued Examination

2. Receipt is acknowledged of a request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e) and a submission, filed on March 15, 2010. The applicant's arguments with respect to claims 27-52 have been considered, but are moot in view of the new grounds of rejection.

As a result, the argued features read upon the references as follows:

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27-29, 31-37, 39-46 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riley et al (Riley) (US Patent Publication No. 2003/0125046 A1), in view of Phelts et al (Phelts) (US Patent Publication No. 2002/0101912 A1).

As per claims 27, 35 and 44, Riley discloses:

- ***A method for determining at least one location coordinate of a mobile terminal with respect to a set of reference elements adapted to send radioelectric***

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signals toward said mobile terminal, (Riley, Paragraphs [0005]-[0007]), Riley teaches a mobile terminal using reference elements to calculate its position location.

- **measuring said radioelectric signals to derive respective measurements**, (Riley, Paragraph [0028]), Riley teaches the mobile terminal measuring radio signals it receives.

- **said measurements being affected by measurement errors**; (Riley, Paragraphs [0032], [0035], [0077] and [0081]), Riley teaches the mobile terminal's measurements being affected by errors.

- **subjecting such respective measurements to state-based statistical filtering**; (Riley, Paragraphs [0015] and [0082], "After collection of multiple measurements upon the base station from one or more mobile stations from several different known locations, these measurements are used as input to a conventional position and time offset computation procedure, such as least squares, or a Kalman filter, as is commonly understood in the art of navigation (e.g., GPS and AFLT).").

said state-based statistical filtering comprising:

- **selecting at least part of said set reference elements as terrestrial reference elements**; (Riley, Paragraphs [0005], [0015] and [0077], "If the position and timing offset of the mobile station is determined from global position satellites or from a number of quality signals from base stations having known positions and timing offsets, then it is possible for the position and timing offset of the mobile station to be quite precise, often to approximately meter and nanosecond level accuracy.").

- **providing at least one first state representative of said at least one location coordinate**; (Riley, Paragraphs [0005], [0028]-[0029] and [0077], "If the mobile station is in communication range of other base stations having know[n] positions, then the position of the mobile station can be determined from signals transmitted between the mobile station and these other base stations, for example, using AFLT.").

- **providing at least one further state in addition to said at least one first state, said at least one further state being representative of said measurement errors**, (Riley, Paragraphs [0015], [0028], [0032] and [0081], "[T]o reduce ranging errors in AFLT position determinations and ranging and timing errors in hybrid position

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determinations, every base station should be calibrated after the base station installation is complete[.]”).

- ***performing said state-based statistical filtering on said respective measurements, using said at least one first state and said at least one further state in said state-based statistical filtering to determine at least one location coordinate of said mobile terminal***, (Riley, Paragraphs [0015], [0069]-[0071] and [0082], “These positions and ranges can serve as inputs to a navigation processor, which can calculate the sector antenna position in the same way that, for example, GPS satellite positions and ranges are used to calculate the position of a GPS receiver. Many methods are available for doing this navigation processing, such as least-mean-squares iteration, and Kalman filtering[.]”).

Riley discloses statistical filtering and measurement errors in location determination but does not specifically disclose:

- ***said measurement errors having non-zero mean***, However, Phelts in an analogous art discloses the limitation. (Phelts, Paragraphs [0011]-[0012], [0050] and [0112]-[0115], “The tracking error in the pseudorange measurement propagates to position, velocity, and other measurements, and is therefore highly detrimental to the accuracy of the system. ... Multipath errors are not zero mean, particularly for large amplitude MP signals, so that even infinite smoothing of the computed pseudorange cannot guarantee unbiased position errors.”).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Phelts into the teaching of Riley to have non-zero mean measurement errors. The modification would be obvious because one of ordinary skill in the art would want the benefit of reducing the effects of multipath in radio communications systems. (Phelts, Paragraph [0003]).

As per claim 28, 36 and 45, Riley further discloses:

- ***wherein said statistical filtering is Kalman filtering***, (Riley, Paragraphs [0015], [0070] and [0082], “The computation procedure may use a conventional least squares program, or a Kalman filter[.]”).

As per claim 29, 37 and 46, Riley further discloses:

- ***associating with said respective measurements at least one additional measurement indicative of at least one of a location and displacement of said mobile terminal***, (Riley, Paragraphs [0005] and [0028], “The CDMA network is capable of locating the position of the AFLT mobile station 22 and the hybrid mobile station 23 using the well-known AFLT technique of the mobile station measuring the time of arrival of so-called pilot radio signals from the base stations.”).

As per claim 31 and 39, Riley further discloses:

- ***including in said set of reference elements at least one satellite-based reference element of a satellite-based positioning system***, (Riley, Abstract and Paragraphs [0005]-[0006] and [0027]-[0030], “A more advanced technique is hybrid position location, where the mobile station employs a Global Positioning System (GPS) receiver and the position is computed based on both AFLT and GPS measurements.”).

As per claim 32, 40 and 49, Riley further discloses:

- ***wherein measuring said radioelectric signals comprises the step of determining at least one parameter selected from the group consisting of: power received at said mobile terminal from said set of reference elements, timing advance, round trip time, observed time differences, and observed time differences of arrival***, (Riley, Paragraphs [0026] and [0042]), Riley teaches measuring radio-electric signals to determine the observed time differences.

As per claim 33 and 41, Riley further discloses:

- ***selecting at least part of said set of reference elements as elements comprising, together with said mobile terminal, a terrestrial cellular***

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communication system, (Riley, Fig. 1 and Paragraphs [0025]-[0026], "FIG. 1 shows a CDMA cellular telephone network using a GPS system for locating mobile telephone units and calibrating base stations.").

As per claims 34, 43 and 50, they are rejected under the same reasons set forth in connection of the rejections of claims 27 and 31.

As per claim 42, Riley further discloses:

- **wherein at least one of said measurement module and said processing module includes a first portion hosted by said mobile terminal and a second portion hosted by a location center, wherein said first and second portions are arranged for data exchange over said terrestrial cellular communication system**, (Riley, Paragraph [0031], "A mobile positioning center (MPC) 36 is connected to mobile switching center (MSC) 34. The MPC 36 manages position location applications and interfaces location data to external data networks through an interworking function (IWF) 37 and a data network link 38.").

Claims 30, 38, 47 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riley et al (Riley) (US Patent Publication No. 2003/0125046 A1), in view of Phelts et al (Phelts) (US Patent Publication No. 2002/0101912 A1), in further view of McBurney et al (McBurney) (US Patent No. 6,055,477 A).

As per claim 30, 38 and 47, Riley teaches measuring an antenna position including the altitude in order to determine position information but does not specifically disclose:

- **measuring an altitude coordinate of said mobile terminal**, However, McBurney in an analogous art discloses the limitation. (McBurney, Abstract and Column 7, Line 60 – Column 8, Line 24, "An altimeter, barometer or other altitude sensor can provide altitude or elevation information that is accurate to within 10-20 meters, depending upon the time elapsed since the last calibration, the quality of the last calibration and the local rate of change of barometric pressure.").

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of McBurney into the teaching of Riley and Phelts to measure an altitude coordinate of a mobile terminal. The modification would be obvious because one of ordinary skill in the art would want the benefit of achieving an integration of measurements to provide better accuracy of two-dimensional and/or three-dimensional location coordinates than with one instrument's location coordinate(s) alone. (McBurney, Column 7, Lines 52-59).

As per claim 51, it is rejected under the same reasons set forth in connection of the rejections of claims 27 – 34.

Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riley et al (Riley) (US Patent Publication No. 2003/0125046 A1), in view of Phelts et al (Phelts) (US Patent Publication No. 2002/0101912 A1), in further view of Hoshino et al (Hoshino) (US Patent No. 6,081,230 A).

As per claim 48, Riley teaches obtaining the location of a mobile terminal but does not specifically disclose:

- ***wherein said mobile terminal is mounted on a vehicle, and said at least one additional measurement is indicative of at least one of a location and displacement of said vehicle,*** However, Hoshino in an analogous art discloses the above limitation. (Hoshino, Fig. 11 and Column 27, Lines 35-45).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Hoshino into the teaching of Riley and Phelts to have the terminal mounted on a vehicle to indicate location and displacement of the vehicle. The modification would be obvious because one of ordinary skill in the art would want the benefit of achieving a navigation system which

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enhances positioning accuracy without employing any sensor of high precision.
(Hoshino, Column 5, Lines 20-53).

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riley et al (Riley) (US Patent Publication No. 2003/0125046 A1), in view of Phelts et al (Phelts) (US Patent Publication No. 2002/0101912 A1), in view of McBurney et al (McBurney) (US Patent No. 6,055,477 A), in further view of Hoshino et al (Hoshino) (US Patent No. 6,081,230 A).

As per claim 52, it is rejected under the same reasons set forth in connection of the rejections of claims 44 – 50.

Conclusion

4. The prior art considered pertinent to applicant's disclosure is made of record and listed on form PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANGELA T. CHAMBERS whose telephone number is 571-270-3168. The examiner can normally be reached Monday through Thursday, 10:00am-6:30pm Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro, can be reached at telephone number 571-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tangela T. Chambers/

Patent Examiner, Art Unit 2617

/NICK CORSARO/

Supervisory Patent Examiner, Art Unit 2617